

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference<br>61804A  | <b>FOR FURTHER ACTION</b><br>See Form PCT/PEA/416  |  |
| International application No.<br>PCT/US2004/012740   | International filing date (day/month/year)<br>23.04.2004   | Priority date (day/month/year)<br>24.04.2003 |
| International Patent Classification (IPC) or national classification and IPC<br>C04B35/185, C04B35/622, C04B38/00, B01D39/20   |  |  |
| Applicant:<br>DOW GLOBAL TECHNOLOGIES INC. et al.  |  |  |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |  |  |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input checked="" type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>  |  |  |
| Date of submission of the demand<br>08.11.2004   | Date of completion of this report<br>08.03.2005  |  |
| Name and mailing address of the International preliminary examining authority:<br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465  | Authorized Officer<br>Vathilakis, S<br>Telephone No. +49 89 2399-8585<br> |  |

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/US2004/012740

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-19 as originally filed

**Claims, Numbers**

1-31 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/US2004/012740

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |             |                  |
|-------------------------------|-------------|------------------|
| Novelty (N)                   | Yes: Claims | 6-11,15,17-29,31 |
|                               | No: Claims  | 1-5,12,14,16,30  |
| Inventive step (IS)           | Yes: Claims | 6-11,15,17-29,31 |
|                               | No: Claims  |                  |
| Industrial applicability (IA) | Yes: Claims | 1-31             |
|                               | No: Claims  |                  |

**2. Citations and explanations (Rule 70.7):**

see separate sheet

**Box No. VI Certain documents cited**

**1. Certain published documents (Rule 70.10)**

and /or

**2. Non-written disclosures (Rule 70.9)**

see separate sheet

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

see separate sheet

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/US2004/012740

**Re Item V.**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-5, 12-14, 16 and 30 is not new in the sense of Article 33(2) PCT.

1. The following documents are referred to in this communication:

D1: WO 03/082773 (Dow Global Technologies) 2003-10-09

D2: PATENT ABSTRACTS OF JAPAN vol. 0165, no. 18 (C-0999), 26 October 1992 (1992-10-26) & JP 4 193782 A (TOSHIBA MONOFRAX CO LTD), 13 July 1992 (1992-07-13)

D3: HYUNHO SHIN ET AL: "Mullitization from a multicomponent oxide system in the temperature range 1200[deg.]-1500[deg.]C" JOURNAL OF THE AMERICAN CERAMIC SOCIETY AMERICAN CERAMIC SOC USA, vol. 83, no. 5, 2000, pages 1237-1240, XP002297619 ISSN: 0002-7820

D4: US 5 145 806 A (SHIRAKAWA HIROSHI ET AL) 8 September 1992 (1992-09-08)

2. INDEPENDENT CLAIM 1

2.1 Document D1 discloses (cf. claim 1) a similar method for preparing acicular mullite using clay. Clay is known to contain apart from the elements present in mullite also Mg, Ca and K in low quantities and represents a precursor compound including the property enhancing elements, and falls within the scope of the method as claimed in claim 1 of the present application.

3. INDEPENDENT CLAIM 30

In the preparation of a porous composition comprised of acicular mullite according to D1, Mg and Fe are employed (cf. claim 30 in D1). These elements are considered to result in a mullite composition being devoid of broomstick grains (see in this respect the mechanism described on top of page 6 of the present application). Hence D1 is considered to anticipate the subject matter of claim 30.

D2 is considered to be relevant to novelty of claim 30, as well. Taking account of the forming method described in the abstract of D2, there is no reason for the formation of mullite crystals having a broomstick structure.

4. Documents D3 and D4 would appear to describe the principle of the formation of needle-like mullite upon use of talc and/or B in the preparation methods.

**5. DEPENDENT CLAIMS 2-5,12-14**

These claims are dependent on claim 1 and as such do not meet the requirements of the PCT with respect to novelty as they contain features known from D1 (see the claims 1-6,12-14 and 16,30 in D1).

**Re Item VII.**

6. The units "mesh", "psi" and "Torr" employed on page 15, 16, are not additionally expressed in terms of the SI- units; cf. Rule 10.1/(a)/and/(b) PCT.

**Re Item VIII.**

7. For clarity the expression "incorporated herein by reference" on page 9, line 21 concerning prior art documents should be deleted, since it is not clear what is incorporated from these documents. Moreover the knowledge of the cited publications is not considered necessary for the practicability of the invention and on the other hand the specification should, regarding the essential features, be capable of being understood without reference to any other document.

**8. Claim 30 - clarity (Art. 6 PCT)**

As this claim stands, no relation is seen to the mullite composition of independent claim 17, it is not clear if it has porosity nor is derivable from the description whether this composition results from the method of claim 1.

The description on page 6, lines 8-10 quotes that broomstick mullite grains may be present in an amount of up to 10% in the composition. This is not consistent with the wording of claim 30, since "substantially devoid of" is to be understood usually that "almost 0%" of such grains are present.